

Abstract

A coupler-multiplexer permutation switch (CMPS) integrates multiplexing and switching functions on a single substrate. It has a single-mode/multi-mode backward coupler followed by a digital optical switch (DOS). In the CMPS, the single-mode waveguide channels are phase-matched through a grating with the corresponding, backward-propagating modes of a multi-mode waveguide. The different modes are subsequently separated in a digital optical switch. Different permutations are obtained by electronically controlling an effective-index distribution of DOS output waveguides.